

HOWARD P. MEDOFF, Ph.D., P.E.
Biomechanical Engineer/Mechanical Engineer

PERSONAL DATA

Year of Birth: 1946

Associate Professor of Engineering: Penn State University (Tenured).

Courses taught include: Biomechanics, Failure Analysis, Statics,
Dynamics, Strength of Materials, Engineering
Design

ACADEMIC BACKGROUND

Ph.D. - Mechanical Engineering, University of Vermont.

Post Master's Program - Biomedical Engineering, Drexel University.

Post Master's Program - Materials Engineering, Drexel University.

M.S. - Engineering, Widener College.

B.S. - Mechanical Engineering, City College of New York.

PROFESSIONAL AFFILIATIONS

American Society for Engineering Education

American Society of Mechanical Engineers

American Society for Testing and Materials (ASTM)

American Society of Metals

ASTM Committee F13 Safety and Traction for Footwear

SPECIALIZED ENGINEERING EXPERTISE

Automobile Accident Reconstruction (including low-speed accidents)

Transportation Equipment (trucks, buses, material handling equipment . . .)

Motorcycle Accident Reconstruction

Vehicle Dynamics

Biomechanics

Occupant Kinematics

Human Factors

Product Design

Product Testing

Product Safety

Mechanical Equipment

Static and Dynamic Structures

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Materials Engineering
Construction Site Safety and Accidents
Playground and Recreational Safety
Playground and Athletic Equipment
ANSI, ASTM, CPSC, OSHA, NFPA
and related Codes and Standards

PRACTICAL EXPERIENCE

Forensic Engineer (Accident Reconstruction involving vehicles, industrial equipment and pedestrians)
Biomechanical Forensic Engineer (involving the biomechanics and mechanics of human injury, and the factors of injury)
Test Engineer (application of scientific method and good engineering practice to consumer and industrial products)
Stress Engineer (including the analysis of materials and structures as they respond to static and/or dynamic forces)
Product Development Consultant (including athletic shoe products)
Lecturer/Author (multiple peer reviewed publications, presentations and research projects)

Forensic Engineering:

For the past 20+ years, I have conducted forensic investigation and analysis of accident reconstruction involving pedestrians, passenger and transport vehicles and industrial equipment applying Newton's Laws of Motion (laws of mechanics) in accordance with nationally recognized (e.g., ASTM) standards outlining acceptable scientific methodology. In addition, I have analyzed the injury potential of human body parts in automobile accidents including low delta-v impacts, as well as the biomechanics and mechanics of human injury in slip and fall and other possible trauma-inducing events. I have also designed equipment to measure applied forces to the musculoskeletal system, and analyzed these forces in order to determine the resulting stresses to human body components. I have applied the principles of impulse and momentum, and kinetic energy of collisions to accident reconstruction; and considered the effect(s) on the musculoskeletal system of forces/energy during automobile impacts as well as other events involving force(s) application to the human body. In addition, I have performed human factors analysis of automobile and non-vehicle incident reconstruction including operator reaction and response time to proprioceptive visual and other stimuli. Safety engineering and design including hazard communication systems (e.g., product warnings) are

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evaluated to provide meaningful data and information for the most logical explanation for incident causation, injury or lack of injury and responsibility.

Biomechanics:

I have studied the biomechanics of the musculoskeletal system for over 20 years, including the application of biomechanical principles to the injury potential of various areas of the human body during a variety of possible injury producing events including automobile accidents. I have taught biomechanics, as well as other engineering courses (e.g., Statics, Dynamics, Failure Analysis, Strength of Materials, Engineering Design . . .) relevant to forensic biomechanical and mechanical accident reconstruction.

COMMITTEE MEMBERSHIPS

ASTM F-13 Footwear and Traction
ASTM F-13 Sub-Committee 13.40 Biomechanics (Vice-Chair)
ASTM F-27 (Skiing Equipment)
ASTM F-27 Sub-Committee (Alpine Ski Boots)

REFERENCES

Provided upon request.